

# 4

AQIM Handbook

## Air Cargo

### *Introduction*

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#### Background

The cargo population, or sampling universe, for AQI monitoring is now defined perisable agricultural cargo. Random samples can be taken from this population with more intensive (hypergeometric) inspections completed and necessary data recorded about these commodities.

In order to properly monitor cargo, you need to have a good understanding of two key statistical principles:

1. It is important that the sample selected be representative of the commodity. Random selection helps ensure this.
2. Once the sample is selected, it is necessary to inspect the sample thoroughly and according to hypergeometric sampling procedures if applicable.

If you want your port to produce quality risk information, then each person participating must have a clear understanding of the sampling universe, the unit of sampling, and inspection consistency issues.

## The Sampling Universe

You estimate the number of actions due to pests or smuggling in a cargo entry pathway by taking random samples from the cargo in the pathway. It is key to good statistics to carefully define this universe from which you want to draw your random sample. The following questions need answers in order to select the sample correctly and to make statistical inferences for the entire universe.

- ◆ How are commodities transported?
- ◆ How many shipments of these commodities are arriving at a work location?
- ◆ What is the seasonality of the commodity?

For cargo AQIM, the sampling universe is defined by a commodity grouping in each of the major cargo pathways such as airplane, ship, or truck. The following commodities or commodity types are **excluded** from the sampling universe:

- ◆ Commodities which are pre-cleared at foreign sites
- ◆ Frozen commodities
- ◆ Commodities which undergo some type of mandatory treatment, other than cold treatment (for example, fumigation, irradiation, hot water treatment) at work locations
- ◆ Oil, salt, iron ore, coal, etc., which have no pest risk.

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## Cargo Strata and Stratifying the Sample

The sampling and inspection processes for AQIM were designed to be compatible with PPQ cargo inspection groupings. The cargo universe is divided into several homogeneous and distinctly separate groups. Each group contains commodities that will be sampled in order to estimate the action and pest approach rates in each group. A port may be sampling one or more of the commodities in a group or across groups. With air cargo, the sampling universe is perishable agricultural cargo. This perishable category is defined as any commercial shipment of fresh fruit or vegetables.

By sampling this category, PPQ is able to get precise estimates of the number of containers with pests approaching or other needed actions. This risk information helps the work location understand how effectively it manages the pest risk for this category, as well as for the entire cargo universe at the port.

It's very important that each commodity in the category selected be representative of all other units of that category. All shipments of a category should have a chance of being selected as a sample. One way to ensure that the sample is representative is to choose a shipment of the commodity at random (either random time, or random number, etc.). This random selection process eliminates the bias of the officer who is selecting the sample. The officer's experience (bias) might lead to choosing a shipment that is more likely to be harboring a pest. This bias would make the sample not representative of the entire commodity universe. The survey results would be skewed and this kind of bias would hamper the port's ability to make the best decisions based on risk analysis.

### Setting Up A Process

Setting up a process of selecting representative samples for each of the commodities will be one of the biggest challenges in AQIM. Because each port has its own unique set of circumstances in cargo operations, the port must individualize its random sampling process. It will be necessary to document the process and possibly ask for feedback from other air cargo ports, regional AQIM coordinators or Port Operations staff who have experience in selecting random samples in the cargo environment. The port may even decide that the Port Risk Management Team determine and review the random sampling process on a regular basis.

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## The Unit of Sampling

For air cargo, the sample unit is the air waybill. It is crucial that the sample unit is inspected closely enough to detect any actionable pests and any smuggling of prohibited agriculture commodities. Summary inspection procedures for air cargo begin on [page 4-5](#). The procedures must be followed exactly in order for the monitoring estimates to be valid and useful.

### Consistency of Data Collection

It is crucial that the monitoring results from the inspection of a random sample unit are recorded accurately and consistently. Because each sample represents many other units, all officers must be as consistent as possible in following the inspection procedures.

Regulated commodities pose a special challenge. If the sample selected is a regulated commodity, it is important to understand the following:

Cargo monitoring estimates the number of air waybills approaching the work location with pest infestation levels requiring action by PPQ. AQIM uses risk-based inspection procedures for detecting a 10

percent or more pest infestation rate. This initial threshold is used to estimate the number of containers approaching a work location with a pest threat.



This 10 percent infestation level may change as the data for AQIM is collected and analyzed

To be 95 percent sure that the officer inspecting the sampled container will find the pest, when the shipment is infested at a 10 percent infestation or more level, the officer must select, at random, a specific number of boxes in the shipment. Determine this number of boxes by using the hypergeometric table illustrated in **Table 4-1:**

**Hypergeometric Table For Random Sampling In Commodity Inspection.** Each of these boxes must be inspected at level of intensity to ensure that:

- ◆ No hitchhiker pests are present in the box,
- ◆ No internal feeding insects are present in randomly selected fruit in the box, and
- ◆ No mismanifested or smuggled items are present.

**TABLE 4-1: Hypergeometric Table For Random Sampling In Commodity Inspection**

Total Number of Boxes on Air waybill	Number of Boxes to Select at Random From the Air Waybill and to Inspect to Detect Pests
1-10	10
11-12	11
13	12
14-15	13
16-17	14
18-19	15
20-22	16
23-25	17
26-28	18
29-32	19
33-38	20
39-44	21
45-53	22
54-65	23
66-82	24
83-108	25
109-157	26
158-271	27
272-885	28
886-200,000	29

Officers should follow normal inspection procedures of the commodities to determine pests. For example, officers should cut fruit to detect internal feeders if external evidence is present.

## Air Cargo Procedures Summary

AIR CARGO AQIM PROCEDURES	
Commodity	(1) Random Sample of perishable agricultural cargo commodities (non-frozen cargo & excluding pre-cleared cargo)
	<b>Miscellaneous</b>
	Animal/Meat Meal: all countries - includes blood, bone, hoof, feather meals
	foodstuffs (PPQ Interest): Pacific Rim

<b>AIR CARGO AQIM PROCEDURES (continued)</b>	
Cargo Population Definition	All air waybills carrying the above category destined to US. This does not include precleared and frozen commodities. Also it does not include commodities with mandatory treatments at port of entry. Note: Commodities with mandatory cold treatments are included.
Sample Size	Two (2) Air Way Bills (AWBs) per week per airport at ALL ports that can sustain this sampling. (excluding cut flowers, precleared and mandatory treatment cargo). <b>Contact Regional AQIM Risk Mgmt Program Mgr. for assistance.</b> <sup>1</sup>
Sample Selection	Port discretion, random time, skip intervals, etc. May need to first determine the total number of shipments of a category received at a port in one year.
Inspection Methodology	Each selected shipment requires a physical inspection at port or consignee premise.  Boxes for inspection must be taken from random locations throughout the container to detect a 10 percent level of infestation (at 95% confidence). The number of boxes shall be set using <b>Table 5-1</b> . Entire contents of boxes selected and available floor space of the container shall be inspected for agricultural pests or mismanifested or smuggled items.
Other Issues	Inspections shall be conducted during the normal business hours at the port. Costs for OT clearance will be paid by the shipper/broker/consignee or government as per port management.  Need to advise shippers, importers, and brokers that random sampling and inspection will be part of day-to-day operations. They should understand that there is a probability that their shipment will be intensely inspected.

1 Regional AQIM Risk Mgmt. Mgrs: Western Region - Judy Pasek: 970-494-7580 Eastern Region - Calvin Shuler: 919-716-5591

## **Pathway Monitoring Maintenance and Quality Assurance**

Port managers and local AQIM coordinators are responsible for ensuring that monitoring activities are being performed and performed properly. To help with reviewing the status of monitoring activities, refer to **Appendix L**. Pathway Monitoring Maintenance in the AQIM Handbook. This appendix contains a checklist of questions port managers and local AQIM coordinators should periodically answer to ensure proper monitoring of each designated pathway at their work locations. **See Figure L-1**. The questions review the following topics:

- ◆ Random sampling
- ◆ Proportional sampling
- ◆ Adequate sampling
- ◆ Accurate and complete data

- ◆ Working risk committees
- ◆ Local support

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## **Air Cargo Worksheet**

On the following pages there is one worksheet for recording information gathered from your inspection of air cargo for the purpose of AQIM. Be sure to record the commodity being inspected properly.

The form is also available as a fillable form; go to:

[http://www.aphis.usda.gov/ppq/manuals/pdf\\_files/AQIM\\_in\\_PDF/Air\\_Cargo.pdf](http://www.aphis.usda.gov/ppq/manuals/pdf_files/AQIM_in_PDF/Air_Cargo.pdf)



# FY02: AIR CARGO: COMMODITY MONITORING DATA

Revised 3/1/2002 (Instructions on Reverse)

PORT: \_\_\_\_\_ Terminal: \_\_\_\_\_ Air Waybill: \_\_\_\_\_ Inspected by: \_\_\_\_\_

A) Commodity: \_\_\_\_\_ B) Date: \_\_\_\_\_ C) Consignee: \_\_\_\_\_  
 D) Carrier (airline / flight number): \_\_\_\_\_ E) Origin: \_\_\_\_\_ F) Destination: \_\_\_\_\_

G) Cargo Description: \_\_\_\_\_ H) Total Cargo Amt: (Count/Weight): \_\_\_\_\_ / \_\_\_\_\_ I) Amt of Cargo Inspected (Count): \_\_\_\_\_  
 Group\* (Regulated Cargo Only)

J) Inspection Method\*\*:  HG  OEC  OPC  TGT  Dunnage  Pallet  Crating  Other

K) Any Solid Wood Packing (SWP): (if YES complete 1 - 4) ==>  
 NO  YES  
 1) Type of SWP: (check one) \_\_\_\_\_  
 2) Was Bark found on SWP:  NO  YES  
 3) Indicate % of SWP inspected \_\_\_\_\_ %  
 4) Certificate for fumigation or other treatment of SWP presented?  NO  YES

L) Based on inspection findings, is additional action necessary to reduce agricultural risk?  NO  YES (IF YES, complete ALL parts of 1,2, 3 & 4 below)  
 \*\*\*\*\*

1) Check the Intended Use of Cargo: >>>  Wholesale/Retail  Propagative  Mfg/Processing  Personal Consumption  Could Not Determine

2) Actionable Pest found? check one :  NO  YES  
 CARGO ITEM \_\_\_\_\_ PEST ID \_\_\_\_\_ PEST INTERCEPTION # \_\_\_\_\_ WHERE WAS PEST FOUND\*\*\*  
 If YES, list info on pest(s):>>> \_\_\_\_\_  CG  SWP  A/C

(Record pest interceptions from SWP here also) \_\_\_\_\_  CG  SWP  A/C

\_\_\_\_\_  CG  SWP  A/C

3) Contaminant Found?:  No  Yes (if YES, list below the info about the contaminant including the item it's associated with, i.e. soil on yarns, manure on truck)

4) Agriculture Items Mismanifested or Smuggled?:  No  Yes (if YES, list below the info about the mismanifested or smuggled cargo item(s))

CONTAMINANT / ITEM	AMOUNT (Count/Weight)	PROHIBITED? (By Reg or Q#)	WHERE WAS IT FOUND***
_____ / _____	_____ / _____	<input type="checkbox"/> No   <input type="checkbox"/> Yes	<input type="checkbox"/> CG <input type="checkbox"/> A/C
_____ / _____	_____ / _____	<input type="checkbox"/> No   <input type="checkbox"/> Yes	<input type="checkbox"/> CG <input type="checkbox"/> A/C
_____ / _____	_____ / _____	<input type="checkbox"/> No   <input type="checkbox"/> Yes	<input type="checkbox"/> CG <input type="checkbox"/> A/C

\*\* Inspection HG - Hypergeometric Sample OPC - Observed Partial Contents \*\*\*Where Found A/C - Interior or Exterior of Air Container

Method: OEC - Observed Entire Contents TGT - Observed Tailgate Only Explanations: SWP - Solid Wood Packing

\* Cargo Descrip. Groups: CG - Associated with cargo

ANPED: animal prod. edible (meat, etc) FCF: fresh cut flowers, etc PLNT: all prop. plants/parts UNKN: unknown or no descrip.

ANPNE: animal prod. NOT edible FFV: fresh fruit /veg SEED: all seeds/grains

BLBIO: blood, serum, biologicals LMBR: Lumber, logs SOIL: soil, dirt, etc.

**DATA FORM INSTRUCTIONS (Air Cargo Commodity Monitoring):**

Revised 03/01/2002

**IMPORTANT:**  
1. All data fields (A-L) must be filled in for a completed monitoring record even if no agriculture risk is found. If answer to "Does cargo require action beyond inspection to reduce agricultural risk" is Yes, then answer all parts of questions 1 through 4. Cargo needs to undergo thorough inspection for pests. Regulated cargo must be sampled using hypergeometric sampling plan. All actionable pest types and quantities found must be recorded. See Pest ID explanation below.

**INSPECTED BY:** Print name or badge number of the person responsible for the inspection of the cargo. This data is for local office use it is not recorded in the monitoring database.

- A) **COMMODITY:** Record the appropriate cargo commodity that is being inspected and targeted.
  - B) **DATE:** Record the date of the inspection.
  - C) **CONSIGNEE:** Record the consignee of this shipment.
  - D) **CARRIER:** Record the appropriate information (airline / flight number) that transported the cargo to the port. Spell names completely.
  - E) **CARGO ORIGIN:** Record the country of origin of the cargo. Spell out the country name. If unable to determine country, then indicate area of origin such as: Asia, Middle East.
  - F) **CARGO DESTINATION:** Record the State where the cargo is destined using the appropriate 2 letter abbreviation.
  - G) **CARGO DESCRIPTION GROUP:** Record the appropriate general group that the cargo is in. If unknown or no description, use UNKN
  - H) **TOTAL CARGO AMOUNT:** Record the TOTAL cargo count of boxes, cartons, bags or other singular units, also record the total amount of cargo by recording the weight in kilograms.
  - I) **AMOUNT OF CARGO INSPECTED: (FOR REGULATED CARGO ONLY)** Indicate the amount of cargo sampled and inspected by recording the number of boxes cartons bags or other singular units that was actually inspected. (Do not record total cargo amount, unless that much was inspected.)
  - J) **INSPECTION METHOD:** Check the appropriate response to indicate the which inspection method was used. See bottom of form for explanation of codes.
  - K) **ANY SOLID WOOD PACKING (SWP):** Check the appropriate response. If yes answer 1 through 4 about the SWP: 1) **TYPE OF SWP:** Indicate the type of solid wood packing inspected. 2) **PERCENTAGE OF SWP INSPECTED:** Estimate the percentage of solid wood packing inspected. 3) **BARK FOUND ON SWP:** Check the Appropriate response. 4) **CERTIFICATE OF FUMIGATION OR OTHER TREATMENT:** Indicate if a certificate for fumigation or other treatment of SWP was presented with entry documents.
  - L) **DOES CARGO OR CARGO CARRIER REQUIRE ACTION BEYOND INSPECTION...:** Check whether cargo or cargo container or cargo carrier requires additional action beyond usual inspection procedures. This includes: pests found, cargo items mismanifested or smuggled, contamination present, cleaning, etc. If yes, then complete all questions in 1 - 4, below starred line.  
\*\*\*\*\*
- \*\*\*SPECIAL NOTE FOR RECORDING DATA ON ANIMAL MEAL: If an action on animal meal do the following:- Record YES for #3 "Contaminant Found" on data sheet (EVEN if contaminant not found then list in the "Contaminant/Item" data fields each individual reason for the action (i.e.: flesh found in shipment OR shipment moist not dry OR from BSE country, etc).
- 1) **INTENDED USE OF CARGO:** Record the intended use of the cargo. Check the appropriate response. If unable to determine, then mark Could Not Determine.
  - 2) **ACTION PEST FOUND:** Record if Actionable pest was found or not. If yes, for each actionable pest record the cargo item (include "container" or "truck" as options if appropriate) that the pest was found on; the full pest identification; the PP Pest ID # assigned; and where infested cargo or pest was found. See bottom front of form for "where" code explanations.
  - 3) **CONTAMINANT FOUND:** Record if contaminant was found or not. If yes, record each contaminant and the item it's associated with (i.e.: manure on truck, soil on yams etc.); and the amount of the contaminant in kilograms if practical (accurately estimate if necessary); whether prohibited or not; and where the pest was found. See bottom front of form for code explanations.
  - 4) **AGRICULTURE ITEM MISMANIFESTED OR SMUGGLED:** Record if mismanifested or smuggled agriculture item(s) were found or not. If yes, record: each item; the amount - both the weight in kilograms (accurately estimate if necessary) and the count, whether prohibited or not; and where the item was found. See bottom front of form.

# 4

AQIM Handbook

## Air Cargo

### *Data Collection and Maintenance*

#### Introduction

The movement of international cargo by aircraft can pose a significant exotic pest and disease risk to agriculture in the United States. The pathway “Air Cargo” encompasses all aspects of cargo movement into the United States by the use of various types of aircraft (cargo freighter, passenger aircraft, etc.). AQIM is designed to randomly sample air cargo shipments to determine the potential threat to agriculture.

Each work location will randomly sample air cargo arriving at that work location. The data collected from the random sampling will help to answer the following questions:

1. What is the threat of agricultural pests approaching the work location?
2. How effective is the AQI program at managing this threat?

The origin and destination of air cargo shipments is important to determine risk. Just as important is if the air cargo shipment carries an actual agriculture pest. While each work location will have different rates of quantity and variety of cargo, the same criteria for sampling will apply to all work locations. Through consistent random sampling a depiction of the pest threat of each type of cargo will emerge. Combined data from all work locations will help determine the pest risk posed by various air cargo items.

AQIM of air cargo shipments is an ongoing function and is an integral part of the AQI program. The ongoing sampling of air cargo shipments will allow work locations to adjust their selection criteria and will ultimately help accomplish our mission.

#### Epi Info User Guide for Data Entry–Air Cargo



When first using Epi Info, thoroughly read the user guide to become familiar with entering data into each of the data fields.

## General Instructions

**After each data entry session** make a back up of the data records file, CGMAIR.REC, to a computer disk. See [Appendix G](#) for procedures for backing up monitoring data.

1. Press [**CAPS LOCK**] (to ensure typing capital letters).
2. Be sure to start at C:\ prompt. Epi Info is a DOS program.
3. Change to the Epi Info directory. Type **CD EPI6** then Press [**ENTER**].
4. Start Epi Info program. Type: [**EPI6**] then Press [**ENTER**].
5. Wait several seconds, the Main Menu will appear with the word Program highlighted.
6. Press [**P**] (to list Program menu).
7. Press [**N**] (to choose ENTER from Program menu).
8. Cursor should be in space below the phrase "Data file (.REC)".
9. Type in the space the cursor is in [**02CGMAIR**].
10. Press [**ENTER**] **3 times** (to load files for data entry).
11. Data entry screen for Cargo Strata should appear.

## Help Statements

Read the following help statements before entering data:

- ◆ Each data entry screen represents only one monitoring inspection. After correct data entry is made and saved, this becomes a record for that one inspection.
- ◆ Some data fields will automatically advance the cursor after entering data, some require pressing [**ENTER**] to advance the cursor after entering data.
- ◆ Some data fields will be skipped depending on the strata.
- ◆ Data entry messages and valid data values for each data field appear at the bottom of the screen or by pressing [**F9**].
- ◆ If an error is made and the cursor has left the data field, use the Up (↑) and Down (↓) arrow keys to move from field to field in order to change or correct data fields already entered.
- ◆ **DO NOT PRESS F6 to delete a record.** Despite the screen label, this does not delete the record, it only places an asterisk on the record number. Epi Info will ignore records with an asterisk when doing analysis commands. To eliminate the unwanted record from the data file, type over the unwanted record with a new record.

## Enter Data

Read the following as you enter data to become familiar with each of the fields.

**Port**—With the first record, you will need to complete this data field. For each record thereafter, this field will repeat. This field is automatically filled in, if not contact the local AQIM Coordinator.

**AIRRECNUM**—Do not enter data in this field. This field is automatically filled in. THIS FIELD WILL SERVE AS THE “OFFICIAL” PERMANENT RECORD NUMBER. DO NOT USE THE NUMBER LOCATED IN THE LOWER RIGHT HAND CORNER OF THE SCREEN TO IDENTIFY A RECORD.

**A) Commodity:**—Press **[F9]** and select the commodity. If you can’t find the commodity, select other and type in the desired commodity in the other field.

**B) Date**—Enter date of inspection from the data form in MM/DD/YYYY format.

**C) Consignee**—Enter the consignee of this shipment.

**D) Carrier**—Enter carrier name and flight number.

**E) Cargo Origin**—Press **[F9]** to open window of valid country names. Type the first and second letters of the country name in order to scroll down the list faster. Use Up (↑) and Down (↓) arrow keys to highlight the country name. Press **[ENTER]** to select it. Note, if you are unable to determine origin, then select a region such as Asia, Middle East.

**OrgnCode**—Do not enter data in this field. This code is entered automatically. Press **[ENTER]** to advance the cursor and automatically fill in the data fields Reg Code and World Region.

**Reg Code**—Do not enter data in this field. This code is entered automatically.

**World Region**—Do not enter data in this field. This code is entered automatically.

**F) Destination**—Press **[F9]** to open window of valid destination names. Type the first letter of destination name in order to scroll down the list faster. Use Up (↑) and Down (↓) arrow keys to highlight correct choice. Press **[ENTER]** to select the destination.

**G) Description Group**—(for regulated cargo only) Enter general group recorded on data form (I).

**H) Cargo Count (Num)**—Enter the amount of cargo units (boxes, cartons, bags, etc.)

**Cargo Weight (KG)**—Enter the amount of cargo by recording the weight in kilograms.

**I) Am. Insp (Num) (Amount Inspected)**—(for regulated cargo only) Enter the number of singular units sampled and inspected (boxes, bags, cartons, etc.).

**J) Inspection Method**—Enter the inspection method circled on the data form (L). Valid values for the methods are listed at the bottom of the screen.

**K) Solid Wood Packing (SWP)**—Enter either **[N]**(no) or **[Y]**(yes).

- ◆ If Y: Cursor will proceed to next data field (SWP Type)
- ◆ If N: Cursor will jump to “Require Action Beyond Inspection to Reduce Risk?”

**1. SWP Type**—Press **[F9]** to open window of valid SWP types. Use Up (↑) and Down (↓) arrow keys to highlight the correct type. Press **[ENTER]** to select it.

**2. Amount of SWP Inspected%**—Enter percentage of SWP inspected.

**3. Bark on SWP**—Enter either **[N]**(no) or **[Y]**(yes) response from the data form.

**4. SWP Fumigation Certif. or Other Treatment presented**—Enter either **[N]**(no) or **[Y]**(yes) response from the data form.

**Required Action Beyond Inspection to Reduce Risk?**—Enter either **[Y]**(yes) or **[N]**(no):

- ◆ If Y: cursor will proceed to next data field.
- ◆ If N: then cursor will jump to bottom of screen asking the question: “Write data to disk (Y/N/<Esc>)?” If data entry is correct and complete, answer Y to this question and the data screen will renew for the next record entry.

**1. Intended Use of Cargo**—Press **[F9]** to open window of valid uses. Use Up (↑) and Down (↓) arrow keys to highlight correct use. Press **[ENTER]** to select it.

**2. Action Pest**—Enter either [**Y**](yes) or [**N**](no):

- ◆ If Y: cursor will proceed to the next data field.
- ◆ If N: Cursor will jump to “3. Contaminant Found?”.

**Cargo Item**—Enter the cargo item that the pest was found on, include cargo conveyance as an option, if appropriate. NOTE: When recording:

- ◆ Use the singular form (except for leaves)
- ◆ Use precise descriptors: fresh, dried, frozen, etc.
- ◆ Describe using common English names, if possible
- ◆ DO NOT use the general descriptors **cucurbit, bean, or rubus sp.** Break down these descriptions to more detailed items, if possible.

**Pest ID**—System will automatically enter NONE (for no pest found). Enter the identified pest name (genus/species).

**Pest Intercep. Num**—System will automatically enter NONE (for no pest found). Enter the pest interception number assigned to the pest. This number maybe assigned later or by another office. If pest interception number assignment is delayed, then enter the letters “TBA” (To Be Assigned). When TBA is used, be sure to note the permanent record number in the upper right corner of screen so updating can be done.

**Where found:WFA**—Enter where the pest was found in relationship to the container/conveyance that the cargo arrived in. See the valid values to enter at the bottom of the screen.

**WFA**—A second field for where the pest was found if the pest is found in more than one of the locations listed.

**Cont (Continue)**—

- ◆ Type [**Y**] if additional pests and cargo items ARE to be entered. Press [ENTER] to leave field and continue on. (Cursor jumps down to next cargo item field. You can enter up to three cargo items in a record.)
- ◆ Type [**N**] if no other items are to be entered in this record. Cursor will jump to “3. Contaminant Found?”.

**3. Contaminant Found?**—Enter [**Y**](yes) or [**N**](no) to indicate if a contaminant was present with the cargo. IF YES, be sure to enter the contaminant information after answering next data field.

**4. Agr. Item Mismanifested/Smuggled?**—[Enter **[Y]**(yes) or **[N]**(no) to indicate if any mismanifested or smuggled items were found with the cargo.

- ◆ If Y, then cursor will proceed to next data field.
- ◆ If N, and
  - ❖ if Yes to previous Contaminant question, cursor will move to next data field.
  - ❖ if No to previous Contaminant question, cursor will jump to the bottom of the screen asking the question: “Write data to disk (Y/N/<Esc>)?”. If data entry is correct and complete, answer Y to this question and the data screen will renew for the next record entry.

**Contaminant/Item**—

- ◆ If Contaminant: Enter the contaminant name and the cargo item (cargo conveyance) it’s associated with. (Soil on yams, manure on truck, etc.)
- ◆ If Mismanifested/Smuggled: Enter the items found.

**Cnt (Cargo Count)**—Enter the amount in singular units (boxes, cartons, bags, etc.), if appropriate.

**Wght, KG**—Enter the amount of listed contaminant or mismanifested/smuggled item in kilograms. Enter best accurate estimate, if necessary.

**Prohibited**—Enter if contaminant or mismanifested/smuggled item is prohibited because of a regulation or quarantine.

**Where found:WFA**—Enter where the contaminant or mismanifested/smuggled item was found in relationship to the container/conveyance that the cargo arrived in. See the valid values to enter at the bottom of the screen.

**WFA**—A second field for where contaminant or mismanifested/smuggled item was found if found in more than one of the locations listed.

**MO**—Do not enter data in this field. This field is filled in automatically with the numeric value of the month. This field is used for analysis purposes.

**Cont (Continue)**—

- ◆ Type [**Y**] if additional pests and cargo items ARE to be entered. Press [ENTER] to leave field and continue on. (Cursor jumps down to the contaminant/item field).
- ◆ Type [**N**] if no other items are to be entered in this record. Cursor will jump to “Write data to disk (Y/N/<Esc>)?”

#### **Write data to disk (Y/N/<Esc>)?--**

- ◆ Type [**Y**] if data entry is complete for this record. Record will be saved to the record's file.
- ◆ Type [**N**] if you wish to make changes or corrections to the record field. After making changes or corrections remember to return the cursor to the last completed data field. Press [**ENTER**] to return to the prompt “Write data to disk (Y/N/<ESC>)?”

#### **When finished with data entry—**

1. Press [**F10**] to return to the main start up screen.
2. Press [**F10**] again to leave Epi Info and return to the regular computer screen.



**After each data entry session**, make a back up of the data records file, **CGMAIR.REC**, to a computer disk. See [Appendix G](#) for back up instructions.



# 4

AQIM Handbook

## Air Cargo

### *Data Analysis*

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#### Survey Results and How to Use Them

AQIM activities have been put into place to develop baseline data to help answer two basic questions:

1. What is the threat of agricultural pests approaching ports? What is the level of infestation of the pests in the cargo?
2. How effective is the AQI program at managing this threat?

Preliminary results from air cargo surveys provide a general answer for question 1. That is, there are varying rates at which prohibited agricultural materials or cargo units infested with an agricultural pest approach the ports. Surveys show that at some ports about 1.5 percent of the cargo units carried actionable pests in the past year, while other work locations show rates as high as 10 percent.

These percentages are an approximation of agricultural pest threat. Further analysis of the monitoring data is needed to determine the risk associated with air cargo approaching the work location. The origin and destination of the cargo are important to determine risk levels. Also, whether or not the cargo carries an actual agricultural pest or smuggled item is crucial in analyzing risk.

Analyses of the monitoring data need to occur at several levels of PPQ. At the ports, PPQ personnel need to study what the data means and answer the first question for their specific location. The AQIM National Team is providing ports with a computer software tool, Epi Info, to help with these analyses. At the same time, PPQ holds risk analysis workshops around the country to introduce risk analysis concepts. At some ports, teams of PPQ officers and managers form Risk Management Teams to look at monitoring data and other data, which is normally collected at the location.

At other locations, analyses of monitoring data occur to establish rates at which quarantined items and agricultural pests are approaching the borders of States, areas of the country, and the United States.

Once baseline rates are well established, PPQ can use the monitoring data as a baseline to answer the second basic question: How effective is the AQI program at managing the risk of introduction of agricultural pests and diseases? Again, each work location must conduct this type of analysis. AQIM provides a framework which work locations can use to carry out the analysis.

## Analysis Tools

The tool available for analyzing AQI monitoring data is the ANALYSIS program in Epi Info. Using the ANALYSIS program in Epi Info you can look at data entered specifically for your work location. While in Epi Info ANALYSIS, you can select a data analysis program file (\*.PGM) that automatically runs a series of Epi Info commands. The program will produce various listings, tables, analysis commands, and explanatory text from data files for a designated pathway. Follow the guidelines on how to load and run data analysis program files beginning on [page 4-22](#).

Epi Info ANALYSIS saves the analysis output to a file for viewing and/or printing. The file contains basic information that answer some of the questions to guide data analysis that follow. For questions not answered by running an automatic program, you will need to key in and run various analysis commands. Follow the Epi Info User Guide for Data Analysis-Air Cargo beginning on [page 4-26](#) to help you with the analysis commands.

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## Questions to Guide Data Analysis

The following questions are a guide for managers and Risk Management Teams to formulate information around. With the answers, valid decisions can be made based on the potential risk of quarantined material and exotic pests and diseases entering a specific pathway. The value of using the monitoring data for decision making is better understood.

1. How many air way bills were selected for sampling during the survey period?

How many actions were required on air waybills sampled?

How many actions by strata category sampled were there?

What is the action approach rate of air waybills that require action (number of air waybills requiring action divided by total air waybills in the sample)? What are the action approach rates by strata category?

2. How many pest interceptions (actionable pests) were made from survey samples?

Pest Approach Rate: What is the rate of pest interceptions in relation to the total sampled number of air waybills (number of air waybills with actionable pests divided by total air waybills in the sample)?

3. Compare the rate of actions required for each month of the survey.

**DISCUSSION:**

Are there easily identified trends when the rate of QMI's transiting the work location are higher?

Are there seasonal trends?

Do higher rates correlate with national or religious holidays, certain types of containers, cargo, or importers?

4. Generate a listing and frequency of shipments requiring action. Which commodities present the greater risk?

Which commodities are most likely to require action? Where were the agricultural pests found? Which commodities involved solid wood packing (SWP) actions? What is the rate of air waybills with smuggled or mismanifested items?

**DISCUSSION:**

How effective is the current tailgate inspection process in detecting pests and/or smuggled cargo?

5. What types of shipments (refrigerated, mixed vegetables, dry containers, empties, cut flowers, express carriers, etc.) require higher rates of action?

**DISCUSSION:**

What selectivity factors are currently used to identify shipments likely to require action?

What additional selectivity factors would be used to identify shipments likely to require action?

Do the survey results indicate additional factors that help identify shipments most likely to require action?

6. Using monitoring data, apply the survey results to the cargo universe at the work location to estimate the number of actions required and interceptions likely to transit the work location during the same time the survey period took place.

How many air waybills arrived at the port during the survey period? Using the action approach rate for air waybills requiring action, calculate an estimate of the number of air waybills transiting the work location that are likely to require action. What are the estimates per strata category?

Using WADS data, how does the estimated number of actions required compare with the reported number of actions taken?

How many additional actions may have been required during the survey period?

How does the estimated number of actionable pest interceptions compare with the reported number of actionable pests on WADS?

### **DISCUSSION:**

What percentage of resources are dedicated to staffing AQI activities for air cargo at the work location?

What is the relative risk of air cargo compared with other pathways in the work location?

Should resources be reallocated among all the pathways in the work location to better address the relative risk of the pathways?

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## **How to Load and Run Data Analysis Program Files**

Data analysis program files are meant to provide only listings, tables, and explanatory text about the monitoring data gathered at work locations. The program files are not intended to be used as final analysis tools. The outputs from these program files should raise further questions and discussion by local personnel and risk management committees.



Each year the AQIM National Team reviews, discusses, and decides about suggested improvements (additions, removals, changes) to the baseline data fields based on analysis and operational needs. A summary of the changes made during previous fiscal years to data fields for the air cargo pathway begin on [page 4-30](#) under Air Cargo Epi Data Translation. Use the summary to identify data field changes that may impact the results of an analysis report run for a particular year.

Data analysis program files automatically run a series of Epi Info analysis commands. Use the following guidelines to load and run data analysis program files.

1. Determine which data analysis program file (\*.PGM) you will load and run in Epi Info.

In Epi Info, ANALYSIS, there is a data analysis program file for each fiscal year of data gathered. Look at the following table to identify the file to load and run depending on which fiscal year's data you are analyzing.

If you want to analyze data for:	Then load and run the following Epi Info ANALYSIS data analysis program file (*.PGM):
FY 1998	CGMAIR98.PGM
FY 1999	CGMAIR99.PGM
FY 2000	CGMAIR2K.PGM
FY 2001	CGMAIR01.PGM
FY 2002	CGMAIR02.PGM

2. Get ready to run a data analysis program file.
  - A. Press: **CAPS LOCK** (to ensure typing capital letters).
  - B. Be sure to start at C:\ prompt. Epi Info is a DOS program.
  - C. Change to the Epi Info directory. Type: [**CD EPI6**], then Press [ENTER].
  - D. Start Epi Info program. Type: [**EPI6**], then Press [ENTER].
  - E. Wait several seconds, the Main Menu will appear with the word Program highlighted.
  - F. Press [**P**] (to list Program menu).
  - G. Press [**A**] (to choose ANALYSIS from Program menu).

If you are running:	Then:
A data program analysis file using Epi Info, ANALYSIS	CONTINUE to <b>Step 3.</b>
Further analysis commands using Epi Info	GO to the "Epi Info User Guide for Data Entry–Air Cargo" on <b>page-4-4-11</b>

3. Run the selected data analysis program file (\*.PGM) from **Step 1.**

You should be at the Epi Info ANALYSIS screen. If not, review **Step 2.**



To leave the analysis mode at any time, press [**F10**]

- A.** At the EPI6 command prompt, Type: **RUN FILENAME** where FILENAME is the \*.PGM file you selected in **Step 1.** For example, if you are analyzing data gathered in Fiscal Year 2000, then you would enter at the command prompt: **RUN CGMAIR2K.PGM**. Then,

Press [**ENTER**]

If you:	Then:
See the following prompt at the bottom of the screen: "Press enter key to pick the records file you want to analyze"	1. Press [ENTER]. A window appears with a listing of *.REC files. 2. GO to <b>Step B.</b>
Do not see the prompt stated in the cell above	DO the following 3 steps

- i. Type: **RUN**, then Press [**ENTER**]. A window appears with a list of \*.PGM files.
- ii. Using the Up (↑) and Down (↓) arrow keys, search and highlight the program file name you want to run (for example, CGMAIR2K.PGM), then Press [**ENTER**].



If you cannot locate the file name you are looking for, then contact you local AQIM coordinator. IF they are not available, then contact the National AQIM Coordinator.

- iii. When the following prompt appears at the bottom of the screen: "Press enter key to pick the records file you want to analyze,"

Press [ENTER]. A window appears with a listing of \*.REC files.

Go to **Step B.**

- B.** Using the Up (↑) and Down (↓) arrow keys, highlight the records file for the desired fiscal year.



The program file (\*.PGM) must match the records file (\*.REC). When you are sure,

Press [**ENTER**].

- C.** You are prompted for a file name where the program will save the output. (An example is given on the screen using a three-letter port code and the date.)

Type **FILENAME**, where FILENAME is the file name you have created to save the program output. Then, Press [**ENTER**].

- D.** You are prompted to enter the date that is **one day before** the date you want the program analysis to start. (The analysis program analyzes all records between two given dates, but does not include the given dates. Therefore, you must enter the dates of the days just before and after the dates you want included in the analysis.)

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**EXAMPLE:** For example, to analyze Fiscal Year 2000 data, you would enter 09/30/1999 (one day before the beginning of Fiscal Year 2000).

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Type the start date following the format (MM/DD/YYYY), where it is one day before the date you want the program analysis to start, then Press [**ENTER**].

- E.** You are prompted to enter the date that is **one day after** the date you want the program analysis to end.

Type the end date following the format (MM/DD/YYYY), where it is **one day after** the date you want the program analysis to end, then Press [**ENTER**].

- 4.** The program will begin analyzing. You will see the program’s output scroll quickly on the screen. It is being saved to the file name you specified in **Step C**.
- 5.** The program is finished when the cursor return to the EPI6> prompt. At this time, you may want to do any of the following:

If you want to:	Then:
View or print the program output file	1. Press [F10] to exit Epi Info 2. Use a word processing program, such as Wordpro to view and/or print the file. <b>NOTE:</b> The file usually is in the C:\EPI6 directory saved in an ASCII (DOS) text file format.
Run a data analysis program file for another fiscal year’s data	Return to <b>Step 1.</b> at the beginning of this subsection to decide which program file to run
Continue with further analysis commands using the Epi Info User guide for Data Analysis	Go to the “ <a href="#">Epi Info User Guide for Data Entry–Air Cargo</a> ” on <a href="#">page-4-4-11</a>
Exit Epi Info ANALYSIS	Press [ <b>F10</b> ]
Exit Epi Info	Press [ <b>F10</b> ] twice

When first running analysis commands in Epi Info, thoroughly read the user guide to become familiar with basic analysis procedures to use with the monitoring data at your work site.

## Epi Info User Guide for Data Analysis–Air Cargo

### Get Ready

1. You should be at the Epi Info, ANALYSIS screen. If not, refer to [Step 2.](#), getting ready to run a data analysis program file, under How to Load and Run Data Analysis Program Files on [page 4-22](#).
2. Press [**F2**] (to list Commands menu).
3. Use arrow key to move cursor to READ command.
4. Press [**ENTER**] **twice** (to get a list of .REC files that can be analyzed).
5. Use arrow keys to move cursor to highlight **02CGMAIR.REC**.
6. Press [**ENTER**] (to bring the \*.REC file you have chosen into the analysis screen).
7. Press [**F4**] (to browse the data records in the file).
8. Use arrow keys to look over the data to make sure it has been entered properly during the past month. (In subsequent months, you will want to browse through the entire file to see that all months of data have been properly entered, repeated fields such as workunit are consistently the same.)

To view only one individual record, press [**F4**] again to see the entire record as it was originally entered. If it is necessary to make changes to the record, note **the Epi Info record number in the lower right corner of the screen**.

If you want to edit, correct or change this record, go to “[Edit Records](#)” beginning on [page 4-29](#).

### Analyze Records

9. Press [**F10**] (to return to the main Analysis screen).
10. Press [**F2**] (to see a list of Analysis commands).
11. Use arrow keys to move the cursor to **FREQ** (frequency), and Press [**ENTER**]
12. Press: [**F3**] (to see a list of data variables). To better understand the data variables, refer to [page 4-30](#) for a list data variable translations for the current FY and a summary of previous FYs.
13. Use arrow keys to highlight the data variable you wish to know the frequency of.

Press [**ENTER**] **twice** and you will get a frequency table.

**EXAMPLE:** For example: If you want to know which carriers had shipments sampled, move the cursor to CARRIER and Press [ENTER] twice. You will get a table showing the number of records entered into the database for each carrier sampled in the survey.

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- 14.** Explore the database by doing **FREQ** commands for as many data variables as is logical. By doing this you will begin to understand the survey data and see some patterns in the data.

For each variable, use the **F2** and **F3** keys to choose the **FREQ** command and variable of interest, or type the word **FREQ** and the data variable names directly at the Analysis prompt.

- 15.** To explore graphic commands: (The **PIE** command is one of several graphics commands which allow you to analyze the variables with graphs. This may make it easier to see patterns in the data and to understand the survey results.)

Press [**F2**] again and choose the **PIE** command with the cursor. Press [**ENTER**].

Press: [**F3**] and select a data variable of interest from your data exploration in the **FREQ** analysis (**Step 10.-Step 14.**).

Press [**ENTER**] **twice** and you will see a pie chart on your screen which might help you understand a pattern in the data.

For example, if you see you have chosen the **CARRIER** variable for a pie graph, then you may see that a larger percentage of samples were taken from one carrier, you might start to question the sampling procedures.

To leave the graph screen and return to the main screen, Press **<ESC>**.

- 16.** Further **FREQ** exploring.

To see the number and kind items carrying pests from random shipment inspections, Press [**F2**] to list commands.

Highlight **FREQ** and Press [ENTER]. (You will next “tag” more than one data variable to move these variable to the analysis command line.)

Press [**F3**] to list data variables, highlight **CARGOITEM**, and “tag” this variable by pressing [**SHIFT**] and [+]. A small arrow will appear next to **CARGOITEM**.

Next, highlight the variable CARGOITE01 and “tag” it. Do the same for CARGOITE02.

The analysis command line should appear: EPI6> FREQ  
CARGOITEM CARGOITE01 CARGOITE02

Press [ENTER]. The output screen should display counts of items for each of the cargo item data lines for all records. Adding up the counts of the items will provide a category breakdown of the agriculture items carrying actionable pests during random sample inspections.

17. Further exploration. Two other commands (F2 TABLES, F2 SELECT) are very useful to explore the survey data and to begin answering questions you may have after using the FREQ and PIE commands.

For example, if you know what air cargo samples had solid wood packing (SWP), then do the following:

Press [F2]. Move the cursor to SELECT. Press [ENTER].

Press [F3]. Move cursor to SWP.

Press [ENTER]. Type: = “Y”.

The command line will then look like this: EPI6>SELECT  
SWP=”Y”

Press [ENTER].

When you run new analysis commands, the analysis will only look at a subset of records where the cargo had SWP. If you want to get back to the entire set of records, Type: F2. Move the cursor to SELECT. Press [ENTER].

18. To continue working with the subset of records established in [Step 17.](#):

Press [F2]. Move the cursor to FREQ. Press [ENTER].

Press [F3]. Choose ORIGIN. Press [ENTER] twice. You will get a table that lists the frequency of sampled records from each country of origin.

Do a PIE ORIGIN analysis command to get a graphic picture of which countries the random shipments are coming from.

19. Press Up (↑) arrow to move the command line cursor to the FREQ ORIGIN command.

Type **\C**. Press **[ENTER]**. The new table will give a statistical analysis with 95 percent confidence intervals.

- 20.** Type on the command line: **TABLES ORIGIN ACTIONPEST** (Or use the F2 and F3 keys to select the TABLES command and the two variables.)

Press **[ENTER]**. You will get a table which shows the frequency that actionable pests are being found in the samples from various origins. This analysis can be used to further understand the cargo risk.

### Edit Records

- E1.** Press **[F10]** **twice** (to get back to the main EPI6 program menu).
- E2.** Press **[P]** (to list Program menu).
- E3.** Press **[N]** (to get to the Edit menu).
- E4.** Press **[F9]** (to list.REC files).
- E5.** Use arrow keys to highlight appropriate.REC file, and

Press **[ENTER]** **four times** to get to the data entry screen for this file.

- E6.** Press: **[CONTROL]** and **[F]** at the same time (to find the record which needs editing).
- E7.** Press **[F2]** and then, **type the number** of the record you need to edit.
- E8.** Press **[ENTER]** (to get to the record you need to edit).
- E9.** Make corrections to the record, using the Up (↑) and Down (↓) arrow keys to move from field to field.

When finished editing, Press **[F10]** and answer **YES** to the question (at the bottom of the screen) that asks to write the edited record to the data file.

Return to the beginning of the user guide on [page 4-11](#).

## Air Cargo Epi Data Translation

### Core Data Fields for the Current Fiscal Year

VARIABLE NAME	SCREEN NAME
PORT	Port:
PIERTERM	Pier- terminal:
AIRRECNUM	Cargo Type: AIRRECNUM: (Permanent record number)
COMMODITY	Commodity:
OTHER	Other:
CARGOCATEG	Cargo Category: (Regulated or Unregulated)
DATE	Date:
CONSIGNEE	Consignee:
CARRIER	Carrier:
ORIGIN	Cargo Origin:
ORGNCODE	OrgnCode:
REGCODE	RegCode:
DESTINATIO	Destination:
WORLDREG	World Region:
DESCGROUP	Description Group:
CARGOCOUNT	Cargo Count:
CARGOWEIGH	Cargo Weight(KG):
AMTINSP	Amt. Insp: (Amount of cargo that was inspected)
INSPECMETH	Inspection Method:
SWP	Solid Wood Packing (SWP):
SWPTYPE	SWP Type:
SWPINSP	Amount of SWP Inspected %:
BARKONSWP	Bark on SWP:
SWPFUMCERT	SWP Fumigation Certif. or Other Treatment presented:
REACTION	Require Action Beyond Inspection to Reduce Risk?:
USECARGO	1. Intended Use of Cargo:
ACTIONPEST	2. Action Pest: (Actionable Pest Found)
<b>First Pest Information:</b>	
CARGOITEM	Cargo Item:
PESTID	PestID:
PESTNUM	Pest Intercep. Num:
WFA	Where Found:WFA:
WFA01	WFA: (Second recording for more than one Where Found location)

<b>VARIABLE NAME</b>	<b>SCREEN NAME</b>
CONT	Cont: (Continue to next Second Pest Information)

Second Pest Information:

CARGOITE01	Cargo Item:
PESTID01	PestID:
PESTNUM01	Pest Intercep. Num:
WFA02	Where Found:WFA:
WFA03	WFA: (Second recording for more than one Where Found location)
CONT01	Cont: (Continue to next Third Pest Information)

**Third Pest Information:**

CARGOITE02	Cargo Item:
PESTID02	PestID:
PESTNUM02	Pest Intercep. Num:
WFA04	Where Found:WFA:
WFA05	WFA: (Second recording for more than one Where Found location)
CONTMFOUND	3. Contaminant Found?:
MISMANSMUG	4. Agr. Item Mismanifested/Smuggled?:

First Contaminant/Mismanifested or Smuggled Information:

CONTMITEM	Contaminant/Item:
CNT	Cnt: (Cargo Amount, count of boxes, cartons, units...etc.)
WGHT	Wght,KG:
PROHIBITED	Prohibited: (Prohibited by Regs or Quarantine #)
WFA06	Where Found: WFA:
WFA07	WFA: (Second recording for more than one Where Found location)
CONT02	Cont: (Continue to next Item Information)

<b>VARIABLE NAME</b>	<b>SCREEN NAME</b>
	Second Contaminant/Mismanifested or Smuggled Information:
CONTMITE01	Contaminant/Item:
CNT01	Cnt: (Cargo Amount, count of boxes, cartons, units...etc.)
WGHT	Wght,KG:
PROHIBIT01	Prohibited: (Prohibited by Regs or Quarantine #)
WFA08	Where Found: WFA:
WFA09	WFA: (Second recording for more than one Where Found location)
MO	MO: (month)



**TABLE 4-1: Summary of Data Field Changes Made During Previous Fiscal Years**

For Fiscal Year:	The following additions, changes, and removals were made to the data fields:
2001	<p><b>Additions:</b> REGCODE=RegCode WORLDREG=World Region DESCGROUP=Description Group</p>
	<p><b>Changes:</b> The order of data fields was reversed for cargo weight and count. CARGOCOUNT used to be CARGOWEIGH CARGOWEIGH used to be CARGOCOUNT CNT used to be WGHT WGHT used to be CNT CNT01 used to be WGHT01 WGHT01 used to be CNT01</p>
	<p><b>Removals:</b> MAO3=MA REFERREDTO=Referred to</p>
1999	<p><b>Additions:</b> AIRRECNUM=AIRRECNUM MAO1=Manifested as MAO2=Mnaifested as MAO3=Manifested as INSPECMETH=Inspection Method SWP=Solid Wood Packing (SWP) SWPTYPE=SWP Type SWPINSP=Amount of SWP Inspected % BARKONSWP=Bark on SWP SWPFUMCERT=SWP Fumigation Certif on Other Treatment presented MO=MO</p>
	<p><b>Changes:</b> MA used to be MANIFESAS</p>
	<p><b>Removals:</b> TIME=Time IDENTNO=Ident AWB No.</p>

**TABLE 4-1: Summary of Data Field Changes Made During Previous Fiscal Years**

<b>For Fiscal Year:</b>	<b>The following additions, changes, and removals were made to the data fields:</b>
2002	Removals: STRATA MA-MA02 Additions: COMMODITY=Commodity OTHER=Other

